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# Anomalous Anisotropies of Fission Fragment Angular Distributions in Subbarrier Fusion Fission Reaction *

Zhang Huanqiao, Xu Jincheng, Liu Zuhua, Lu Jun, Xu Kan, and Ruan Ming

Institute of Atomic Energy, P.O.Box 275,102413 Beijing, China

Fission cross sections and angular distributions of fission fragments have been measured with mica track detector for the $^{19}F + ^{232}Th$ reaction at the bombarding energies from 81 to 105 MeV. The fusion excitation function is rather well reproduced on the basis of the coupled channels theory (CCDEF code) in the interested energy region. However the measured values of anisotropy of fission fragment angular distributions can not be explained on the basis of present approaches. Moreover, it is observed the first time that as a function of the center-of-mass energy the anisotropies show a bump around 84.5 MeV, while the excitation function varies monotonically. The origin of both the larger than expected anisotropies and the bump as a function of center-of-mass energy is not clear. Positive comments must await further experiments.

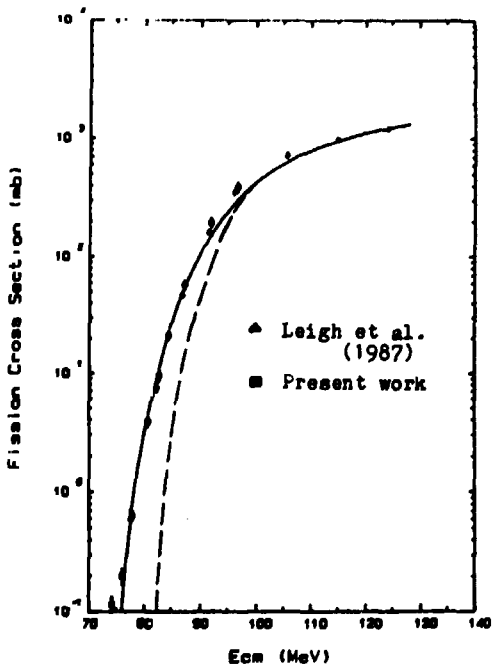


Fig. 1 Fission excitation function for the $^{19}F + ^{232}Th$ reaction. The full and dashed curves are the theoretical calculations of coupled channels and one dimensional barrier penetration, respectively.

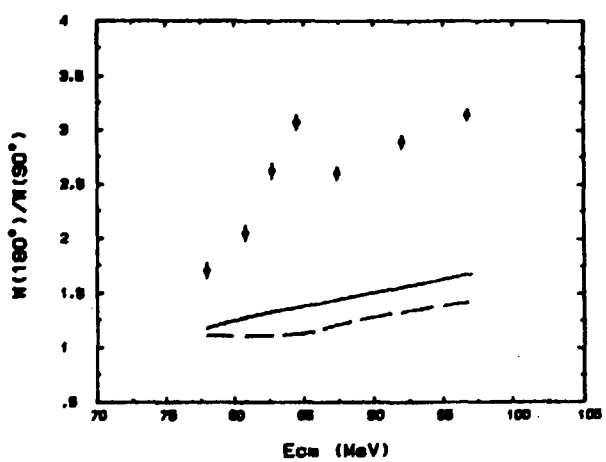


Fig. 2 Experimental anisotropies(dots) of fission fragment angular distributions for the $^{19}F + ^{232}Th$ reaction at near and subbarrier energies. The solid and dashed curves are the trasition state calculations with $T_1$ obtained from coupled channels and one dimensional barrier penetration calculations of the excitation function.

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